

IN THE CLAIMS:

Please cancel claims 3 and 7-9 without prejudice.

1. (Previously Presented) A fuel cell comprising:
 - a first compartment containing a cathode;
 - a source of hydrogen atom associated with said first compartment;
 - a catalyst having a net enthalpy of reaction of at least $m \cdot 27 \text{ eV}$, where m is an integer, for catalyzing the formation of hydride atoms from said hydrogen atoms;
 - a second compartment containing an anode; and
 - a salt bridge between said anode and said cathode.
2. (Previously Presented) A fuel cell comprising:
 - a vessel having a first compartment containing a cathode and increased binding energy hydrogen atom having a binding energy of about $13.6/n^2 \text{ eV}$, where n is a fraction whose numerator is 1 and denominator is an integer greater than 1;
 - a second compartment containing an anode and a reductant; and
 - a salt bridge connecting the first compartment and the second compartment.
3. (Cancelled)
4. (Original) A fuel cell of claim 2 further comprising a source of increased binding energy hydrogen atom for supplying said increased binding energy hydrogen atom.
5. (Original) A fuel cell of claim 4 wherein said source of increased binding energy hydrogen atom comprises a compound including at least one increased binding energy hydrogen species selected from the group consisting of:

an increased binding energy hydride ion having a binding energy greater than 0.8 eV,
said increased binding energy hydrogen atom,
an increased binding energy hydrogen molecule having a first binding energy of about $15.5/n^2$ eV, and
an increased binding energy molecular hydrogen ion having a first binding energy of about $16.4/n^2$ eV.

6. (Original) A fuel cell of claim 4 wherein said increased binding energy atomic hydrogen is provided by at least one source cell selected from the group consisting of an electrolytic cell, a gas cell, a gas discharge cell, and a plasma torch cell, and the fuel cell further comprises a passageway for said increased binding energy hydrogen atom communicating between said source cell and the fuel cell first compartment.

Claims 7-9 (Cancelled)

10. (Original) A method for generating electricity in a vessel having a first compartment containing a cathode, a second compartment containing an anode and a reductant, and a salt bridge connecting the first compartment and the second compartment, said method comprising the steps of

supplying increased binding energy hydrogen atom having a binding energy of about $13.6/n^2$ eV, where n is a fraction whose numerator is 1 and denominator is an integer greater than 1, to said first compartment, and

reacting said increased binding energy hydrogen atom at the cathode with electrons supplied by the reductant in said first compartment, thereby producing an increased binding energy hydride ion having a binding energy greater than about 0.8 eV in said first compartment.

11. (Original) A method of claim 10 wherein said step of supplying includes releasing said

atomic hydrogen by thermal decomposition upon heating a compound including at least one increased binding energy hydrogen species selected from the group consisting of the increased binding energy hydride ion, the increased binding energy hydrogen atom, an increased binding energy hydrogen molecule having a first binding energy of about $15.5/n^2$ eV, and an increased binding energy molecular hydrogen ion having a first binding energy of about $16.4/n^2$ eV.

12. (Original) A method of claim 11 wherein said step of reacting includes contacting the electrons with said compound including at least one of said increased binding energy hydrogen species.

13. (Original) A method of claim 11 wherein said step of supplying includes reacting said compound including at least one of said increased binding energy hydrogen species with an element replacing from said compound at least one of said increased binding energy hydrogen species.

14. (Original) A method of claim 11 wherein said compound is substantially pure.

15. (Previously Presented) A fuel cell comprising:

- a vessel having first and second compartments;
- a source of hydrino atoms associated with said first compartment;
- a cathode in said first compartment;
- an anode in said second compartment; and
- a salt bridge connecting said anode and said cathode.

16. (Currently Amended) A fuel cell comprising:

- a vessel having first and second compartments;
- a source of hydrogen atoms associated with said first compartment;

- a cathode in said first compartment;
- a source of catalyst for forming hydrino atoms from said hydrogen atoms, said source of catalyst comprising a salt of rubidium;
- an anode in said second compartment; and
- a salt bridge connecting said anode and said cathode.

17. (Previously Presented) A fuel cell according to claim 16, wherein said salt of rubidium is selected from the group consisting of RbOH, Rb₂SO₄, Rb₂CO₃, and Rb₃PO₄.

18. (Previously Presented) A fuel cell comprising:

- a vessel having first and second compartments;
- a source of hydrogen atoms associated with said first compartment;
- a cathode in said first compartment;
- a source of catalyst for forming hydrino atoms from said hydrogen atoms, said source of catalyst comprising a salt of potassium;
- an anode in said second compartment; and
- a salt bridge connecting said anode and said cathode.

19. (Previously Presented) A fuel cell according to claim 18, wherein said salt of potassium is selected from the group consisting of KOH, K₂SO₄, K₂CO₃ and K₃PO₄.

20. (Previously Presented) A fuel cell comprising:

- a vessel having first and second compartments;
- a source of hydrogen atoms associated with said first compartment;
- a cathode in said first compartment;
- a source of catalyst for forming hydrino atoms from said hydrogen atoms, said source of catalyst comprising a salt of titanium
- an anode in said second compartment; and

a salt bridge connecting said anode and said cathode.

21. (Previously Presented) A fuel cell according to claim 20, wherein said salt of titanium is selected from the group consisting of TiF_2 , TiCl_2 , TiBr_2 , TiI_2 and TiS .
22. (Previously Presented) A fuel cell comprising:
 - a vessel having first and second compartments;
 - a source of hydrogen atoms associated with said first compartment;
 - a cathode in said first compartment;
 - an anode in said second compartment;
 - a salt bridge connecting said anode and said cathode; and
 - a source of catalyst for forming hydrino atoms from said hydrogen atoms, said source of catalyst comprising at least one selected from the group consisting of (Al^{2+}) , (Ar^+) , (Ti^{2+}) , (As^{2+}) , (Rb^+) , (Mo^{2+}) , (Ru^{2+}) , (In^{2+}) , and (Te^{2+}) .
23. (Previously Presented) A fuel cell comprising:
 - a vessel having first and second compartments;
 - a source of hydrogen atoms associated with said first compartment;
 - a cathode in said first compartment;
 - an anode in said second compartment;
 - a salt bridge connecting said anode and said cathode; and
 - a source of catalyst for forming hydrino atoms from said hydrogen atoms, said catalyst being capable of providing a net enthalpy of reaction in the range of 26.8 to 28.5 eV.
24. (Previously Presented) A fuel cell comprising:
 - a vessel having first and second compartments;
 - a source of hydrogen atoms associated with said first compartment;

a cathode in said first compartment;
an anode in said second compartment;
a salt bridge connecting said anode and said cathode; and
a source of catalyst for forming hydrino atoms from said hydrogen atoms,
said catalyst comprising at least one pair of ions selected from the group consisting of: (Sn^{4+} , Si^{4+}), (Pr^{3+} , Ca^{2+}), (Sr^{2+} , Cr^{2+}), (Cr^{3+} , Tb^{3+}), (Sb^{3+} , Co^{2+}), (Bi^{3+} , Ni^{2+}), (Pd^{2+} , In^{+}), (La^{3+} , Dy^{3+}), (La^{3+} , Ho^{3+}), (K^{+} , K^{+}), (V^{3+} , Pd^{2+}), (Lu^{3+} , Zn^{2+}), (As^{3+} , Ho^{3+}), (Mo^{5+} , Sn^{4+}), (Sb^{3+} , Cd^{2+}), (Ag^{2+} , Ag^{+}), (La^{3+} , Er^{3+}), (V^{4+} , B^{3+}), (Fe^{3+} , Ti^{3+}), (Co^{2+} , Ti^{+}), (Bi^{3+} , Zn^{2+}), (As^{3+} , Dy^{3+}), (Ho^{3+} , Mg^{2+}), (K^{+} , Rb^{+}), (Cr^{3+} , Pr^{3+}), (Sr^{2+} , Fe^{2+}), (Ni^{2+} , Cu^{+}), (Li^{+} , Pb^{2+}), (Sr^{2+} , Mo^{2+}), (Y^{3+} , Zr^{4+}), (Cd^{2+} , Ba^{2+}), (Ho^{3+} , Pb^{2+}), (Eu^{3+} , Mg^{2+}), (Er^{3+} , Mg^{2+}), (Bi^{4+} , Al^{3+}), (Ca^{2+} , Sm^{3+}), (V^{3+} , La^{3+}), (Gd^{3+} , Cr^{2+}), (Mn^{2+} , Ti^{+}), (Yb^{3+} , Fe^{2+}), (Ni^{2+} , Ag^{+}), (Zn^{2+} , Yb^{2+}), (Se^{4+} , Sn^{4+}), (Sb^{3+} , Bi^{2+}), and (Eu^{3+} , Pb^{2+}).

25. (Previously Presented) A fuel cell comprising:

a vessel having first and second compartments;
a source of hydrogen atoms associated with said first compartment;
a cathode in said first compartment;
an anode in said second compartment;
a salt bridge connecting said anode and said cathode; and
a source of catalyst for forming hydrino atoms from said hydrogen atoms,
said catalyst comprising oxygen in combination with at least one atom selected from the group consisting of Cu, As, Pd, Te, Cs and Pt.

26. (Previously Presented) A fuel cell comprising:

a vessel having first and second compartments;
a source of hydrogen atoms associated with said first compartment;
a cathode in said first compartment;
an anode in said second compartment;

a salt bridge connecting said anode and said cathode; and

a source of catalyst for forming hydrino atoms from said hydrogen atoms, said catalyst comprising at least one pair selected from the group consisting of: (B, Li⁺), (S, Li⁺), (Br, Li⁺), (Pm⁺, Li⁺), (Sm⁺, Li⁺), (Tb⁺, Li⁺), (Dy⁺, Li⁺), (Sb⁺, H⁺) and (Bi⁺, H⁺).

27. (Previously Presented) A fuel cell comprising:

a vessel having first and second compartments;

a source of hydrogen atoms associated with said first compartment;

a cathode in said first compartment;

an anode in said second compartment;

a salt bridge connecting said anode and said cathode; and

a source of catalyst for forming hydrino atoms from said hydrogen atoms, said catalyst comprising at least one pair selected from the group consisting of:

(He 0+ , Co 3+);	(O 1+ , Nd 4+);	(Al 2+ , Cl 5+);
(He 0+ , Ga 3+);	(O 1+ , Tb 4+);	(Al 4+ , Mn 8+);
(Li 0+ , Ni 3+);	(O 2+ , Ne 3+);	(Si 1+ , Mg 2+);
(Li 0+ , Xe 3+);	(O 3+ , Sb 6+);	(Si 1+ , V 2+);
(Li 0+ , Hg 3+);	(O 4+ , Fe 7+);	(Si 1+ , Tc 2+);
(Li 1+ , Na 4+);	(F 0+ , Al 2+);	(Si 1+ , Sn 2+);
(Li 1+ , Y 6+);	(F 0+ , Si 2+);	(Si 1+ , Hf 2+);
(Be 1+ , Bi 6+);	(F 0+ , Fe 2+);	(Si 1+ , Pb 2+);
(Be 2+ , Al 6+);	(F 0+ , Co 2+);	(Si 2+ , Co 3+);
(B 1+ , C 2+);	(F 0+ , Ru 2+);	(Si 2+ , Ga 3+);
(B 1+ , K 2+);	(F 0+ , In 2+);	(Si 2+ , Ge 3+);
(B 1+ , Ho 3+);	(F 0+ , Sb 2+);	(Si 2+ , Tl 3+);
(B 1+ , Er 3+);	(F 0+ , Bi 2+);	(Si 3+ , Ni 6+);
(B 1+ , Tm 3+);	(F 1+ , Sb 4+);	(Si 3+ , Rb 7+);
(B 1+ , Lu 3+);	(F 3+ , Fe 6+);	(Si 4+ , Al 6+);
(C 1+ , N 2+);	(Ne 0+ , Sm 3+);	(P 1+ , Mg 2+);
(C 1+ , V 3+);	(Ne 0+ , Dy 3+);	(P 1+ , Tc 2+);
(C 1+ , Tc 3+);	(Ne 0+ , Ho 3+);	(P 1+ , Sn 2+);
(C 1+ , Ru 3+);	(Ne 0+ , Er 3+);	(P 1+ , Hf 2+);
(C 1+ , Sn 3+);	(Ne 0+ , Lu 3+);	(P 1+ , Pb 2+);
(C 2+ , Mn 4+);	(Ne 1+ , N 3+);	(P 2+ , Ni 3+);
(C 2+ , Co 4+);	(Ne 1+ , K 3+);	(P 2+ , Cd 3+);
(N 0+ , Sr 2+);	(Ne 1+ , V 4+);	(P 2+ , Xe 3+);
(N 0+ , La 2+);	(Ne 2+ , O 4+);	(P 3+ , Nb 5+);

(N 0+ , Ce 2+);	(Na 0+ , Al 2+);	(P 5+ , C 5+);
(N 0+ , Pr 2+);	(Na 0+ , Si 2+);	(S 1+ , P 2+);
(N 0+ , Nd 2+);	(Na 0+ , Fe 2+);	(S 1+ , Se 2+);
(N 0+ , Pm 2+);	(Na 0+ , Co 2+);	(S 1+ , La 3+);
(N 0+ , Sm 2+);	(Na 0+ , Ru 2+);	(S 1+ , Ce 3+);
(N 0+ , Eu 2+);	(Na 0+ , In 2+);	(S 1+ , Au 2+);
(N 1+ , O 2+);	(Na 0+ , Sb 2+);	(S 2+ , Sr 3+);
(N 1+ , Si 3+);	(Na 0+ , Bi 2+);	(S 2+ , Cd 3+);
(N 1+ , P 3+);	(Na 2+ , Ti 5+);	(S 3+ , Cu 4+);
(N 1+ , Mn 3+);	(Na 2+ , Kr 6+);	(S 3+ , Rb 4+);
(N 1+ , Rh 3+);	(Na 3+ , Y 7+);	(S 4+ , O 4+);
(N 2+ , F 3+);	(Mg 1+ , Rb 3+);	(Cl 1+ , C 2+);
(N 3+ , Br 6+);	(Mg 1+ , Eu 4+);	(Cl 1+ , K 2+);
(O 0+ , Ti 2+);	(Mg 3+ , Ne 5+);	(Cl 1+ , Zr 3+);
(O 0+ , V 2+);	(Mg 6+ , Cl 8+);	(Cl 1+ , Eu 3+);
(O 0+ , Nb 2+);	(Al 1+ , Sc 2+);	(Cl 1+ , Tm 3+);
(O 0+ , Hf 2+);	(Al 1+ , Zr 2+);	(Cl 2+ , Te 4+);
(O 1+ , Ne 2+);	(Al 1+ , Lu 2+);	(Cl 2+ , Sm 4+);
(O 1+ , Ca 3+);	(Al 2+ , S 5+);	(Cl 2+ , Gd 4+);
(Cl 2+ , Ho 4+);	(Sc 4+ , N 5+);	(Mn 4+ , Ge 5+);
(Cl 2+ , Er 4+);	(Ti 2+ , Ar 2+);	(Fe 1+ , Sc 2+);
(Cl 3+ , Cl 4+);	(Ti 2+ , Mo 3+);	(Fe 1+ , Y 2+);
(Cl 5+ , Ni 6+);	(Ti 4+ , O 5+);	(Fe 1+ , Yb 2+);
(Cl 5+ , Cu 6+);	(Ti 4+ , Zn 6+);	(Fe 1+ , Lu 2+);
(Cl 5+ , Rb 7+);	(Ti 4+ , As 6+);	(Fe 2+ , S 3+);
(Ar 0+ , Ba 2+);	(V 1+ , Sr 2+);	(Fe 2+ , Cu 3+);
(Ar 0+ , Ce 2+);	(V 1+ , La 2+);	(Fe 2+ , Zn 3+);
(Ar 0+ , Pr 2+);	(V 1+ , Ce 2+);	(Fe 2+ , Br 3+);
(Ar 0+ , Nd 2+);	(V 1+ , Pr 2+);	(Fe 2+ , Zr 4+);
(Ar 0+ , Ra 2+);	(V 1+ , Nd 2+);	(Fe 2+ , Ce 4+);
(Ar 1+ , Ti 3+);	(V 1+ , Pm 2+);	(Fe 5+ , Sr 7+);
(Ar 2+ , C 3+);	(V 1+ , Sm 2+);	(Co 1+ , Mg 2+);
(Ar 3+ , K 4+);	(V 1+ , Eu 2+);	(Co 1+ , Cr 2+);
(Ar 3+ , Br 5+);	(V 2+ , O 2+);	(Co 1+ , Mn 2+);
(Ar 3+ , Mo 5+);	(V 3+ , Mn 4+);	(Co 1+ , Mo 2+);
(Ar 4+ , Y 5+);	(V 3+ , Co 4+);	(Co 1+ , Tc 2+);
(K 1+ , Si 3+);	(V 4+ , Ar 6+);	(Co 1+ , Pb 2+);
(K 1+ , P 3+);	(V 4+ , Sc 5+);	(Co 2+ , Cu 3+);
(K 1+ , Mn 3+);	(V 5+ , Mg 5+);	(Co 2+ , Zn 3+);
(K 1+ , Ge 3+);	(V 6+ , Sc 8+);	(Co 2+ , Br 3+);
(K 1+ , Rh 3+);	(V 6+ , Br 8+);	(Co 2+ , Zr 4+);
(K 1+ , Tl 3+);	(Cr 1+ , Sc 2+);	(Co 2+ , Ag 3+);
(K 2+ , He 2+);	(Cr 1+ , Ti 2+);	(Co 2+ , Ce 4+);
(K 2+ , Si 4+);	(Cr 1+ , Zr 2+);	(Co 2+ , Hf 4+);
(K 2+ , As 4+);	(Cr 1+ , Lu 2+);	(Co 4+ , Nb 6+);
(K 3+ , P 5+);	(Cr 2+ , F 2+);	(Co 5+ , Sc 6+);
(K 3+ , Zr 5+);	(Cr 2+ , Na 2+);	(Ni 1+ , Co 2+);
(K 4+ , Rb 6+);	(Cr 2+ , Se 3+);	(Ni 1+ , Ni 2+);
(K 5+ , Mg 4+);	(Cr 2+ , Pd 3+);	(Ni 1+ , Rh 2+);

(K 5+ , Kr 7+);	(Cr 2+ , I 3+);	(Ni 1+ , Cd 2+);
(K 6+ , Y 8+);	(Cr 2+ , Hg 3+);	(Ni 1+ , Sb 2+);
(Ca 1+ , C 2+);	(Cr 3+ , O 3+);	(Ni 2+ , Ne 2+);
(Ca 1+ , Sm 3+);	(Cr 3+ , Ni 4+);	(Ni 2+ , Ca 3+);
(Ca 1+ , Dy 3+);	(Cr 4+ , O 4+);	(Ni 2+ , Nd 4+);
(Ca 1+ , Ho 3+);	(Cr 5+ , Ne 5+);	(Ni 2+ , Tb 4+);
(Ca 1+ , Er 3+);	(Cr 5+ , Fe 7+);	(Ni 4+ , Rb 6+);
(Ca 1+ , Tm 3+);	(Mn 1+ , V 2+);	(Ni 6+ , Ar 8+);
(Ca 1+ , Lu 3+);	(Mn 1+ , Nb 2+);	(Cu 1+ , Ag 2+);
(Ca 2+ , O 3+);	(Mn 1+ , Sn 2+);	(Cu 1+ , I 2+);
(Ca 2+ , Ni 4+);	(Mn 1+ , Hf 2+);	(Cu 1+ , Cs 2+);
(Ca 3+ , Mn 5+);	(Mn 2+ , Cu 3+);	(Cu 1+ , Au 2+);
(Ca 3+ , Rb 5+);	(Mn 2+ , Zn 3+);	(Cu 1+ , Hg 2+);
(Ca 4+ , Cl 6+);	(Mn 2+ , Br 3+);	(Cu 2+ , Sm 4+);
(Ca 4+ , Ar 6+);	(Mn 2+ , Zr 4+);	(Cu 2+ , Gd 4+);
(Ca 4+ , Sc 5+);	(Mn 2+ , Ce 4+);	(Cu 2+ , Dy 4+);
(Ca 5+ , Y 7+);	(Mn 2+ , Hf 4+);	(Cu 3+ , K 4+);
(Sc 2+ , Ti 4+);	(Mn 3+ , Mg 3+);	(Cu 3+ , Br 5+);
(Sc 2+ , Bi 4+);	(Mn 3+ , Te 5+);	(Cu 3+ , Mo 5+);
(Cu 4+ , Rb 6+);	(Se 1+ , Fe 2+);	(Sr 1+ , Ga 2+);
(Cu 5+ , Mn 7+);	(Se 1+ , Co 2+);	(Sr 1+ , Te 2+);
(Zn 1+ , P 2+);	(Se 1+ , Ge 2+);	(Sr 1+ , Pt 2+);
(Zn 1+ , I 2+);	(Se 1+ , Ru 2+);	(Sr 1+ , Tl 2+);
(Zn 1+ , La 3+);	(Se 1+ , In 2+);	(Sr 2+ , C 3+);
(Zn 1+ , Au 2+);	(Se 1+ , Bi 2+);	(Sr 2+ , Mo 4+);
(Zn 1+ , Hg 2+);	(Se 2+ , Te 3+);	(Sr 3+ , Ar 4+);
(Zn 2+ , Ti 4+);	(Se 3+ , Br 4+);	(Sr 3+ , Sr 4+);
(Zn 2+ , Sn 4+);	(Se 5+ , Y 7+);	(Sr 3+ , Sb 5+);
(Zn 2+ , Bi 4+);	(Br 1+ , P 2+);	(Sr 3+ , Bi 5+);
(Zn 3+ , As 5+);	(Br 1+ , I 2+);	(Sr 4+ , Ar 5+);
(Zn 4+ , Sr 6+);	(Br 1+ , La 3+);	(Sr 4+ , Cu 5+);
(Zn 5+ , Mn 7+);	(Br 1+ , Au 2+);	(Y 2+ , Sr 3+);
(Zn 6+ , Mo 8+);	(Br 3+ , He 2+);	(Y 2+ , Cd 3+);
(Ga 1+ , Cr 2+);	(Br 3+ , Si 4+);	(Y 3+ , Se 5+);
(Ga 1+ , Mn 2+);	(Br 3+ , Ge 4+);	(Y 3+ , Pb 5+);
(Ga 1+ , Fe 2+);	(Br 4+ , S 5+);	(Y 4+ , Ti 5+);
(Ga 1+ , Ge 2+);	(Br 4+ , Cl 5+);	(Y 4+ , Zn 5+);
(Ga 1+ , Mo 2+);	(Br 5+ , Sb 6+);	(Y 5+ , Co 6+);
(Ga 1+ , Ru 2+);	(Br 6+ , Ar 8+);	(Y 6+ , K 7+);
(Ga 1+ , Bi 2+);	(Kr 1+ , B 2+);	(Zr 2+ , P 2+);
(Ga 2+ , Rb 3+);	(Kr 1+ , S 2+);	(Zr 2+ , Ag 2+);
(Ga 2+ , Eu 4+);	(Kr 1+ , Br 2+);	(Zr 2+ , I 2+);
(Ga 2+ , Tm 4+);	(Kr 1+ , Xe 2+);	(Zr 2+ , Cs 2+);
(Ge 1+ , Mg 2+);	(Kr 1+ , Nd 3+);	(Zr 2+ , La 3+);
(Ge 1+ , Mn 2+);	(Kr 1+ , Pm 3+);	(Zr 2+ , Au 2+);
(Ge 1+ , Tc 2+);	(Kr 1+ , Tb 3+);	(Zr 2+ , Hg 2+);
(Ge 1+ , Sn 2+);	(Kr 2+ , Kr 3+);	(Nb 2+ , C 2+);
(Ge 1+ , Pb 2+);	(Kr 2+ , Tb 4+);	(Nb 2+ , K 2+);
(Ge 2+ , F 2+);	(Kr 3+ , O 3+);	(Nb 2+ , Zr 3+);

(Ge 2+ , Na 2+);	(Kr 3+ , Ni 4+);	(Nb 2+ , Eu 3+);
(Ge 2+ , Se 3+);	(Kr 3+ , Kr 4+);	(Nb 2+ , Tm 3+);
(Ge 2+ , Pd 3+);	(Kr 3+ , Nb 5+);	(Nb 2+ , Lu 3+);
(Ge 2+ , I 3+);	(Kr 4+ , Zr 5+);	(Nb 3+ , Kr 3+);
(Ge 3+ , V 5+);	(Kr 5+ , Sr 6+);	(Nb 3+ , Pr 4+);
(Ge 3+ , Se 5+);	(Kr 6+ , Y 7+);	(Nb 3+ , Tb 4+);
(Ge 3+ , Pb 5+);	(Rb 1+ , Nb 3+);	(Nb 4+ , N 4+);
(As 1+ , Sc 2+);	(Rb 2+ , Te 4+);	(Mo 1+ , Ba 2+);
(As 1+ , Y 2+);	(Rb 2+ , Sm 4+);	(Mo 1+ , Pr 2+);
(As 1+ , Zr 2+);	(Rb 2+ , Gd 4+);	(Mo 1+ , Nd 2+);
(As 1+ , Lu 2+);	(Rb 2+ , Dy 4+);	(Mo 1+ , Ra 2+);
(As 2+ , Co 3+);	(Rb 2+ , Ho 4+);	(Mo 2+ , Ru 3+);
(As 2+ , Ga 3+);	(Rb 2+ , Er 4+);	(Mo 2+ , Sn 3+);
(As 2+ , Ge 3+);	(Rb 3+ , Mg 3+);	(Mo 3+ , Cr 4+);
(As 2+ , Tl 3+);	(Rb 3+ , Te 5+);	(Mo 3+ , Ge 4+);
(As 3+ , Fe 4+);	(Rb 5+ , Rb 6+);	(Mo 4+ , Bi 5+);
(As 4+ , Sb 6+);	(Rb 6+ , Te 7+);	(Mo 5+ , Mn 6+);
(Se 1+ , Al 2+);	(Sr 1+ , Be 2+);	(Mo 6+ , O 6+);
(Se 1+ , Si 2+);	(Sr 1+ , Zn 2+);	(Mo 6+ , Cr 7+);
(Tc 1+ , Sr 2+);	(Sn 1+ , Er 2+);	(Pr 2+ , Xe 2+);
(Tc 1+ , La 2+);	(Sn 2+ , N 2+);	(Pr 2+ , Pr 3+);
(Tc 1+ , Ce 2+);	(Sn 2+ , Ar 2+);	(Pr 2+ , Nd 3+);
(Tc 1+ , Pm 2+);	(Sn 2+ , V 3+);	(Pr 2+ , Pm 3+);
(Tc 1+ , Sm 2+);	(Sn 2+ , Mo 3+);	(Pr 2+ , Gd 3+);
(Tc 1+ , Eu 2+);	(Sn 3+ , Mn 4+);	(Pr 2+ , Tb 3+);
(Tc 1+ , Tb 2+);	(Sn 3+ , Fe 4+);	(Nd 2+ , Sm 3+);
(Tc 1+ , Dy 2+);	(Sn 3+ , Co 4+);	(Nd 2+ , Dy 3+);
(Ru 1+ , Ca 2+);	(Sb 2+ , Ti 3+);	(Nd 2+ , Ho 3+);
(Ru 1+ , Eu 2+);	(Sb 2+ , Sb 3+);	(Nd 2+ , Er 3+);
(Ru 1+ , Tb 2+);	(Sb 2+ , Bi 3+);	(Nd 2+ , Lu 3+);
(Ru 1+ , Dy 2+);	(Sb 3+ , C 3+);	(Pm 2+ , C 2+);
(Ru 1+ , Ho 2+);	(Te 1+ , Sc 2+);	(Pm 2+ , K 2+);
(Ru 1+ , Er 2+);	(Te 1+ , Y 2+);	(Pm 2+ , Zr 3+);
(Rh 1+ , V 2+);	(Te 1+ , Gd 2+);	(Pm 2+ , Eu 3+);
(Rh 1+ , Nb 2+);	(Te 1+ , Tm 2+);	(Pm 2+ , Tm 3+);
(Rh 1+ , Sn 2+);	(Te 1+ , Yb 2+);	(Sm 2+ , Cl 2+);
(Rh 1+ , Hf 2+);	(Te 1+ , Lu 2+);	(Sm 2+ , Sc 3+);
(Pd 1+ , Al 2+);	(Te 2+ , Sc 3+);	(Sm 2+ , Yb 3+);
(Pd 1+ , Si 2+);	(Te 2+ , Kr 2+);	(Eu 2+ , Nb 3+);
(Pd 1+ , Fe 2+);	(Te 2+ , Yb 3+);	(Gd 2+ , Cl 2+);
(Pd 1+ , Co 2+);	(Te 2+ , Hf 3+);	(Gd 2+ , Sc 3+);
(Pd 1+ , Ru 2+);	(Te 3+ , Ar 3+);	(Gd 2+ , Eu 3+);
(Pd 1+ , In 2+);	(Te 3+ , La 4+);	(Gd 2+ , Yb 3+);
(Pd 1+ , Sb 2+);	(Te 3+ , Yb 4+);	(Tb 2+ , B 2+);
(Pd 1+ , Bi 2+);	(Te 4+ , Bi 5+);	(Tb 2+ , S 2+);
(Ag 1+ , Cu 2+);	(I 1+ , Al 2+);	(Tb 2+ , Br 2+);
(Ag 1+ , As 2+);	(I 1+ , Si 2+);	(Tb 2+ , Xe 2+);
(Ag 1+ , Ag 2+);	(I 1+ , Fe 2+);	(Tb 2+ , Sm 3+);
(Ag 1+ , Cs 2+);	(I 1+ , Co 2+);	(Tb 2+ , Tb 3+);

(Ag 1+ , Hg 2+);	(I 1+ , Ge 2+);	(Tb 2+ , Dy 3+);	
(Cd 1+ , Zn 2+);	(I 1+ , Ru 2+);	(Tb 2+ , Ho 3+);	
(Cd 1+ , Ga 2+);	(I 1+ , In 2+);	(Tb 2+ , Er 3+);	
(Cd 1+ , Cd 2+);	(I 1+ , Bi 2+);	(Dy 2+ , Cl 2+);	
(Cd 1+ , Tl 2+);	(Xe 1+ , Al 2+);	(Dy 2+ , K 2+);	
(In 1+ , Sc 2+);	(Xe 1+ , Co 2+);	(Dy 2+ , Zr 3+);	
(In 1+ , Y 2+);	(Xe 1+ , Ni 2+);	(Dy 2+ , Eu 3+);	
(In 1+ , Yb 2+);	(Xe 1+ , Rh 2+);	(Dy 2+ , Yb 3+);	
(In 1+ , Lu 2+);	(Xe 1+ , Cd 2+);	(Ho 2+ , Sc 3+);	
(In 2+ , Sr 3+);	(Xe 1+ , Sb 2+);	(Ho 2+ , Yb 3+);	
(In 2+ , Cd 3+);	(La 2+ , Ti 3+);	(Ho 2+ , Hf 3+);	
(Sn 1+ , Ca 2+);	(La 2+ , Sb 3+);	(Er 2+ , Sc 3+);	
(Sn 1+ , Sr 2+);	(Ce 2+ , Ag 2+);	(Er 2+ , Yb 3+);	
(Sn 1+ , La 2+);	(Ce 2+ , I 2+);	(Er 2+ , Hf 3+);	
(Sn 1+ , Sm 2+);	(Ce 2+ , Cs 2+);	(Tm 2+ , Kr 2+);	
(Sn 1+ , Eu 2+);	(Ce 2+ , Au 2+);	(Tm 2+ , Nb 3+);	
(Sn 1+ , Tb 2+);	(Ce 2+ , Hg 2+);	(Tm 2+ , Hf 3+);	
(Sn 1+ , Dy 2+);	(Pr 2+ , B 2+);	(Yb 2+ , Ti 3+);	
(Sn 1+ , Ho 2+);	(Pr 2+ , Y 3+);	(Lu 2+ , Kr 2+);	
(Lu 2+ , Hf 3+);	(Pb 2+ , As 3+);	(Tl 1+ , Mg 2+);	
(Hf 2+ , As 2+);	(Pb 2+ , In 3+);	(Tl 1+ , Mn 2+);	
(Hf 2+ , Ag 2+);	(Pb 2+ , Te 3+);	(Tl 1+ , Mo 2+);	
(Hf 2+ , I 2+);	(Pb 2+ , Pb 3+);	(Tl 1+ , Tc 2+);	
(Hf 2+ , Cs 2+);	(Pb 3+ , Br 4+);	(Tl 1+ , Sn 2+);	
(Hf 2+ , Hg 2+);	(Bi 1+ , Ba 2+);	(Tl 1+ , Pb 2+);	
(Hg 1+ , Al 2+);	(Bi 2+ , Ar 2+);	(Pb 1+ , Sc 2+);	
(Hg 1+ , Si 2+);	(Bi 2+ , Mo 3+);	(Pb 1+ , Y 2+);	
(Hg 1+ , Co 2+);	(Bi 3+ , Se 4+);	(Pb 1+ , Lu 2+);	and
(Hg 1+ , Ni 2+);	(Bi 3+ , Mo 4+);	(Pb 2+ , Fe 3+);	
(Hg 1+ , Rh 2+);	(Bi 3+ , Pb 4+);		
(Hg 1+ , Cd 2+);	(Bi 4+ , P 5+);		
(Hg 1+ , In 2+);	(Bi 4+ , Kr 5+);		
(Hg 1+ , Sb 2+);	(Bi 4+ , Zr 5+);		

28. (Previously Presented) A fuel cell comprising:

a vessel having first and second compartments;

a source of hydrogen atoms associated with said first compartment;

a cathode in said first compartment;

an anode in said second compartment;

a salt bridge connecting said anode and said cathode; and

a source of catalyst for forming hydride atoms from said hydrogen atoms,
said catalyst comprising at least one free atom selected from the group consisting of

Be, Cu, Zn, Pd, Te and Pt.

29. (Previously Presented) A fuel cell comprising:

a vessel having first and second compartments;

a source of hydrogen atoms associated with said first compartment;

a cathode in said first compartment;

an anode in said second compartment;

a salt bridge connecting said anode and said cathode; and

a source of catalyst for forming hydrino atoms from said hydrogen atoms,

said catalyst comprising at least two species selected from the group consisting of:

(Li 0+ , Ar 5+); (P 1+ , Nd 4+); (Ti 2+ , As 5+);
 (Li 0+ , Mo 6+); (P 1+ , Tb 4+); (Ti 2+ , Se 5+);
 (Be 0+ , Kr 5+); (P 3+ , Na 5+); (V 1+ , Cd 3+);
 (B 0+ , Sc 3+); (S 0+ , Sm 3+); (V 1+ , I 3+);
 (B 0+ , Zr 3+); (S 0+ , Dy 3+); (V 1+ , Hg 3+);
 (B 0+ , Yb 3+); (S 0+ , Ho 3+); (V 2+ , Kr 4+);
 (C 0+ , Te 3+); (S 0+ , Er 3+); (V 2+ , Nb 5+);
 (C 0+ , Tl 3+); (S 0+ , Lu 3+); (V 4+ , Ni 7+);
 (N 0+ , Ag 3+); (S 1+ , Nb 4+); (V 4+ , Kr 8+);
 (N 0+ , Cd 3+); (S 1+ , Ho 4+); (Cr 1+ , S 3+);
 (N 0+ , Hg 3+); (S 1+ , Er 4+); (Cr 1+ , Ca 3+);
 (N 1+ , Bi 5+); (S 1+ , Tm 4+); (Cr 3+ , Be 3+);
 (N 2+ , Br 6+); (S 2+ , Bi 5+); (Cr 3+ , Zn 5+);
 (N 2+ , Kr 6+); (Cl 0+ , Ti 3+); (Cr 5+ , Cu 8+);
 (O 0+ , Cl 3+); (Cl 1+ , Mo 4+); (Mn 1+ , Nd 4+);
 (O 0+ , Kr 3+); (Cl 1+ , Pb 4+); (Mn 1+ , Tb 4+);
 (O 0+ , Sm 4+); (Cl 3+ , Sc 5+); (Mn 2+ , Ca 4+);
 (O 0+ , Dy 4+); (Cl 4+ , Br 7+); (Mn 3+ , Nb 6+);
 (O 2+ , Na 4+); (Ar 0+ , Mn 3+); (Mn 5+ , Ca 8+);
 (O 2+ , Cl 6+); (Ar 0+ , As 3+); (Fe 1+ , Nd 4+);
 (O 2+ , Mn 6+); (Ar 0+ , Rh 3+); (Fe 1+ , Pm 4+);
 (O 3+ , Al 5+); (Ar 0+ , Tl 3+); (Fe 1+ , Tb 4+);
 (F 0+ , Bi 4+); (Ar 1+ , Mn 4+); (Fe 3+ , Ne 4+);
 (F 1+ , Mn 5+); (Ar 1+ , In 4+); (Fe 5+ , Mo 8+);
 (F 3+ , Mg 5+); (Ar 5+ , Mg 5+); (Co 1+ , Pm 4+);
 (F 4+ , Ti 8+); (K 0+ , Al 3+); (Co 2+ , C 4+);
 (Ne 1+ , Ge 5+); (K 0+ , Cr 3+); (Co 3+ , Mg 4+);
 (Ne 4+ , Al 6+); (K 0+ , Pb 3+); (Ni 1+ , La 4+);
 (Na 0+ , Cr 4+); (K 1+ , Sc 4+); (Ni 1+ , Yb 4+);
 (Na 0+ , Ge 4+); (K 2+ , Cl 5+); (Ni 1+ , Lu 4+);

(Na 1+ , Sc 5+); (Ca 0+ , Eu 3+); (Ni 2+ , K 4+);
 (Na 1+ , Bi 6+); (Ca 0+ , Dy 3+); (Ni 5+ , Fe 8+);
 (Na 3+ , Ne 6+); (Ca 0+ , Ho 3+); (Cu 0+ , Ce 3+);
 (Na 4+ , Ne 7+); (Ca 0+ , Er 3+); (Cu 0+ , Pr 3+);
 (Mg 0+ , Kr 3+); (Ca 1+ , Mg 3+); (Cu 1+ , Ar 3+);
 (Mg 2+ , Al 5+); (Ca 1+ , Fe 4+); (Cu 1+ , Ti 4+);
 (Mg 3+ , Na 6+); (Ca 1+ , Co 4+); (Cu 1+ , Te 4+);
 (Al 1+ , Zr 5+); (Ca 3+ , Co 6+); (Cu 2+ , Sn 5+);
 (Al 3+ , Mg 6+); (Ca 3+ , Y 6+); (Zn 0+ , Y 3+);
 (Al 3+ , Cr 8+); (Sc 1+ , C 3+); (Zn 0+ , Pm 3+);
 (Si 1+ , Zn 3+); (Sc 1+ , Te 4+); (Zn 0+ , Gd 3+);
 (Si 1+ , Ce 4+); (Ti 1+ , Mn 3+); (Zn 0+ , Tb 3+);
 (Si 2+ , Na 4+); (Ti 1+ , Ga 3+); (Zn 1+ , Mo 4+);
 (Si 2+ , Cl 6+); (Ti 1+ , As 3+); (Zn 1+ , Pb 4+);
 (Si 3+ , Be 4+); (Ti 1+ , Rh 3+); (Zn 2+ , N 4+);
 (Si 5+ , N 6+); (Ti 1+ , Tl 3+); (Zn 2+ , Kr 5+);
 (Zn 3+ , N 5+); (Y 5+ , Co 7+); (Ce 1+ , Ho 3+);
 (Zn 5+ , Co 8+); (Zr 1+ , Zr 3+); (Ce 1+ , Er 3+);
 (Ga 1+ , Bi 4+); (Zr 2+ , Sc 4+); (Ce 1+ , Lu 3+);
 (Ge 1+ , S 3+); (Zr 2+ , Sr 4+); (Pr 1+ , Sc 3+);
 (Ge 1+ , Ce 4+); (Nb 1+ , Mo 3+); (Pr 1+ , Zr 3+);
 (As 1+ , Ca 3+); (Nb 1+ , Sb 3+); (Pr 1+ , Yb 3+);
 (As 1+ , Br 3+); (Nb 1+ , Bi 3+); (Nd 1+ , Nb 3+);
 (As 2+ , F 3+); (Nb 2+ , Sn 4+); (Nd 1+ , Hf 3+);
 (As 2+ , Kr 4+); (Nb 2+ , Sb 4+); (Pm 1+ , Nb 3+);
 (As 2+ , Nb 5+); (Nb 3+ , Co 5+); (Sm 1+ , Ti 3+);
 (Se 1+ , Zn 3+); (Nb 3+ , Rb 5+); (Eu 1+ , V 3+);
 (Se 1+ , Ce 4+); (Nb 4+ , Zn 6+); (Eu 1+ , Mo 3+);
 (Se 2+ , Kr 4+); (Mo 1+ , Se 3+); (Eu 1+ , Sb 3+);
 (Se 2+ , Nb 5+); (Mo 1+ , I 3+); (Gd 1+ , Bi 3+);
 (Se 3+ , Ni 5+); (Mo 4+ , Fe 6+); (Tb 1+ , Hf 3+);
 (Se 4+ , Nb 7+); (Mo 5+ , Rb 8+); (Dy 1+ , Ti 3+);
 (Br 0+ , Eu 3+); (Ag 0+ , La 3+); (Ho 1+ , Bi 3+);
 (Br 0+ , Tm 3+); (Ag 0+ , Ce 3+); (Er 1+ , Bi 3+);
 (Br 1+ , Nb 4+); (Cd 0+ , La 3+); (Tm 1+ , V 3+);
 (Br 1+ , Gd 4+); (In 1+ , Nd 4+); (Tm 1+ , Mo 3+);
 (Br 1+ , Ho 4+); (In 1+ , Tb 4+); (Tm 1+ , Sb 3+);
 (Br 1+ , Er 4+); (Sn 1+ , Si 3+); (Yb 1+ , Al 3+);
 (Br 2+ , F 3+); (Sn 1+ , Co 3+); (Yb 1+ , Ru 3+);
 (Br 2+ , Ga 4+); (Sn 1+ , Ge 3+); (Yb 1+ , In 3+);
 (Br 3+ , O 4+); (Sn 2+ , F 3+); (Yb 1+ , Sn 3+);
 (Br 3+ , Al 4+); (Sn 2+ , Ga 4+); (Lu 1+ , Tc 3+);
 (Br 4+ , N 5+); (Sb 1+ , Si 3+); (Lu 1+ , Ru 3+);
 (Kr 0+ , Ti 3+); (Sb 1+ , Co 3+); (Lu 1+ , In 3+);
 (Kr 1+ , Sn 4+); (Sb 1+ , Ge 3+); (Lu 1+ , Sn 3+);
 (Kr 1+ , Sb 4+); (Sb 2+ , As 4+); (Hf 1+ , Sc 3+);
 (Kr 2+ , Ne 3+); (Te 1+ , Mn 3+); (Hf 1+ , Yb 3+);
 (Kr 2+ , Bi 5+); (Te 1+ , As 3+); (Hg 0+ , La 3+);
 (Kr 3+ , O 4+); (Te 1+ , Rh 3+); (Pb 1+ , Ni 3+);

(Kr 3+ , Al 4+); (Te 1+ , Te 3+); (Pb 1+ , Se 3+);
 (Kr 4+ , Ar 6+); (Te 1+ , Tl 3+); (Pb 2+ , F 3+);
 (Rb 0+ , Sc 3+); (Te 2+ , Cr 4+); (Pb 2+ , Ga 4+);
 (Rb 0+ , Zr 3+); (Te 2+ , Ge 4+); (Bi 1+ , P 3+);
 (Rb 0+ , Yb 3+); (Te 2+ , As 4+); (Bi 1+ , Sr 3+);
 (Rb 1+ , N 3+); (Te 3+ , Zr 5+); (La 1+ , Ru 3+);
 (Sr 1+ , C 3+); (Te 4+ , Ni 6+); (La 1+ , In 3+);
 (Sr 1+ , Ar 3+); (Te 4+ , Cu 6+); (La 1+ , Sn 3+);
 (Sr 1+ , Ti 4+); (Xe 0+ , Pr 3+); (Ce 1+ , Sm 3+); and
 (Sr 1+ , Te 4+); (Xe 0+ , Nd 3+); (Ce 1+ , Dy 3+).
 (Sr 3+ , Nb 6+); (La 1+ , Tc 3+);

30. (Previously Presented) A method of generating electricity in a fuel cell comprising a vessel having a first compartment containing a cathode, a second compartment containing an anode and a reductant, and a salt bridge between the first and second compartments, the method comprising:
 supplying hydrino atoms to said first compartment;
 reducing said hydrino atoms by supplying said hydrino atoms with electrons from said cathode to form increased binding energy hydride ions and producing a current between said cathode and anode.
31. (Previously Presented) A method according to claim 30, further comprising the step of forming said hydrino atoms from hydrogen atoms by use of a catalyst.
32. (Previously Presented) A method according to claim 31, wherein said catalyst comprises a salt of rubidium.
33. (Previously Presented) A method according to claim 32, wherein said salt of rubidium is selected from the group consisting of RbOH, Rb₂SO₄, Rb₂CO₃, and Rb₃PO₄.
34. (Previously Presented) A method according to claim 31, wherein said catalyst comprises a salt of potassium.

35. (Previously Presented) A method according to claim 34, wherein said salt of potassium is selected from the group consisting of KOH, K₂SO₄, K₂CO₃ and K₃PO₄.
36. (Previously Presented) A method according to claim 31, wherein said catalyst comprising a salt of titanium.
37. (Previously Presented) A method according to claim 36, wherein said salt of titanium is selected from the group consisting of TiF₂, TiCl₂, TiBr₂, TiI₂ and TiS.
38. (Previously Presented) A method according to claim 31, wherein said catalyst comprising at least one selected from the group consisting of (Al²⁺), (Ar⁺), (Ti²⁺), (As²⁺), (Rb⁺), (Mo²⁺), (Ru²⁺), (In²⁺), and (Te²⁺).
39. (Previously Presented) A method according to claim 31, wherein said catalyst being capable of providing a net enthalpy of reaction in the range of 26.8 to 28.5 eV.
40. (Previously Presented) A method according to claim 31, wherein said catalyst comprising at least one pair of ions selected from the group consisting of: (Sn⁴⁺, Si⁴⁺), (Pr³⁺, Ca²⁺), (Sr²⁺, Cr²⁺), (Cr³⁺, Tb³⁺), (Sb³⁺, Co²⁺), (Bi³⁺, Ni²⁺), (Pd²⁺, In⁺), (La³⁺, Dy³⁺), (La³⁺, Ho³⁺), (K⁺, K⁺), (V³⁺, Pd²⁺), (Lu³⁺, Zn²⁺), (As³⁺, Ho³⁺), (Mo⁵⁺, Sn⁴⁺), (Sb³⁺, Cd²⁺), (Ag²⁺, Ag⁺), (La³⁺, Er³⁺), (V⁴⁺, B³⁺), (Fe³⁺, Ti³⁺), (Co²⁺, Ti⁺), (Bi³⁺, Zn²⁺), (As³⁺, Dy³⁺), (Ho³⁺, Mg²⁺), (K⁺, Rb⁺), (Cr³⁺, Pr³⁺), (Sr²⁺, Fe²⁺), (Ni²⁺, Cu⁺), (Li⁺, Pb²⁺), (Sr²⁺, Mo²⁺), (Y³⁺, Zr⁴⁺), (Cd²⁺, Ba²⁺), (Ho³⁺, Pb²⁺), (Eu³⁺, Mg²⁺), (Er³⁺, Mg²⁺), (Bi⁴⁺, Al³⁺), (Ca²⁺, Sm³⁺), (V³⁺, La³⁺), (Gd³⁺, Cr²⁺), (Mn²⁺, Ti⁺), (Yb³⁺, Fe²⁺), (Ni²⁺, Ag⁺), (Zn²⁺, Yb²⁺), (Se⁴⁺, Sn⁴⁺), (Sb³⁺, Bi²⁺), and (Eu³⁺, Pb²⁺).
41. (Previously Presented) A method according to claim 31, wherein said catalyst comprising oxygen in combination with at least one atom selected from the group

consisting of Cu, As, Pd, Te, Cs and Pt.

42. (Previously Presented) A method according to claim 31, wherein said catalyst comprising at least one pair selected from the group consisting of: (B, Li⁺), (S, Li⁺), (Br, Li⁺), (Pm⁺, Li⁺), (Sm⁺, Li⁺), (Tb⁺, Li⁺), (Dy⁺, Li⁺), (Sb⁺, H⁺) and (Bi⁺, H⁺).

43. (Previously Presented) A method according to claim 31, wherein said catalyst comprising at least one pair selected from the group consisting of:

(He 0+ , Co 3+);	(O 1+ , Nd 4+);	(Al 2+ , Cl 5+);
(He 0+ , Ga 3+);	(O 1+ , Tb 4+);	(Al 4+ , Mn 8+);
(Li 0+ , Ni 3+);	(O 2+ , Ne 3+);	(Si 1+ , Mg 2+);
(Li 0+ , Xe 3+);	(O 3+ , Sb 6+);	(Si 1+ , V 2+);
(Li 0+ , Hg 3+);	(O 4+ , Fe 7+);	(Si 1+ , Tc 2+);
(Li 1+ , Na 4+);	(F 0+ , Al 2+);	(Si 1+ , Sn 2+);
(Li 1+ , Y 6+);	(F 0+ , Si 2+);	(Si 1+ , Hf 2+);
(Be 1+ , Bi 6+);	(F 0+ , Fe 2+);	(Si 1+ , Pb 2+);
(Be 2+ , Al 6+);	(F 0+ , Co 2+);	(Si 2+ , Co 3+);
(B 1+ , C 2+);	(F 0+ , Ru 2+);	(Si 2+ , Ga 3+);
(B 1+ , K 2+);	(F 0+ , In 2+);	(Si 2+ , Ge 3+);
(B 1+ , Ho 3+);	(F 0+ , Sb 2+);	(Si 2+ , Tl 3+);
(B 1+ , Er 3+);	(F 0+ , Bi 2+);	(Si 3+ , Ni 6+);
(B 1+ , Tm 3+);	(F 1+ , Sb 4+);	(Si 3+ , Rb 7+);
(B 1+ , Lu 3+);	(F 3+ , Fe 6+);	(Si 4+ , Al 6+);
(C 1+ , N 2+);	(Ne 0+ , Sm 3+);	(P 1+ , Mg 2+);
(C 1+ , V 3+);	(Ne 0+ , Dy 3+);	(P 1+ , Tc 2+);
(C 1+ , Tc 3+);	(Ne 0+ , Ho 3+);	(P 1+ , Sn 2+);
(C 1+ , Ru 3+);	(Ne 0+ , Er 3+);	(P 1+ , Hf 2+);
(C 1+ , Sn 3+);	(Ne 0+ , Lu 3+);	(P 1+ , Pb 2+);
(C 2+ , Mn 4+);	(Ne 1+ , N 3+);	(P 2+ , Ni 3+);
(C 2+ , Co 4+);	(Ne 1+ , K 3+);	(P 2+ , Cd 3+);
(N 0+ , Sr 2+);	(Ne 1+ , V 4+);	(P 2+ , Xe 3+);
(N 0+ , La 2+);	(Ne 2+ , O 4+);	(P 3+ , Nb 5+);
(N 0+ , Ce 2+);	(Na 0+ , Al 2+);	(P 5+ , C 5+);
(N 0+ , Pr 2+);	(Na 0+ , Si 2+);	(S 1+ , P 2+);
(N 0+ , Nd 2+);	(Na 0+ , Fe 2+);	(S 1+ , Se 2+);
(N 0+ , Pm 2+);	(Na 0+ , Co 2+);	(S 1+ , La 3+);
(N 0+ , Sm 2+);	(Na 0+ , Ru 2+);	(S 1+ , Ce 3+);
(N 0+ , Eu 2+);	(Na 0+ , In 2+);	(S 1+ , Au 2+);
(N 1+ , O 2+);	(Na 0+ , Sb 2+);	(S 2+ , Sr 3+);
(N 1+ , Si 3+);	(Na 0+ , Bi 2+);	(S 2+ , Cd 3+);
(N 1+ , P 3+);	(Na 2+ , Ti 5+);	(S 3+ , Cu 4+);
(N 1+ , Mn 3+);	(Na 2+ , Kr 6+);	(S 3+ , Rb 4+);
(N 1+ , Rh 3+);	(Na 3+ , Y 7+);	(S 4+ , O 4+);

(N 2+ , F 3+);	(Mg 1+ , Rb 3+);	(Cl 1+ , C 2+);
(N 3+ , Br 6+);	(Mg 1+ , Eu 4+);	(Cl 1+ , K 2+);
(O 0+ , Ti 2+);	(Mg 3+ , Ne 5+);	(Cl 1+ , Zr 3+);
(O 0+ , V 2+);	(Mg 6+ , Cl 8+);	(Cl 1+ , Eu 3+);
(O 0+ , Nb 2+);	(Al 1+ , Sc 2+);	(Cl 1+ , Tm 3+);
(O 0+ , Hf 2+);	(Al 1+ , Zr 2+);	(Cl 2+ , Te 4+);
(O 1+ , Ne 2+);	(Al 1+ , Lu 2+);	(Cl 2+ , Sm 4+);
(O 1+ , Ca 3+);	(Al 2+ , S 5+);	(Cl 2+ , Gd 4+);
(Cl 2+ , Ho 4+);	(Sc 4+ , N 5+);	(Mn 4+ , Ge 5+);
(Cl 2+ , Er 4+);	(Ti 2+ , Ar 2+);	(Fe 1+ , Sc 2+);
(Cl 3+ , Cl 4+);	(Ti 2+ , Mo 3+);	(Fe 1+ , Y 2+);
(Cl 5+ , Ni 6+);	(Ti 4+ , O 5+);	(Fe 1+ , Yb 2+);
(Cl 5+ , Cu 6+);	(Ti 4+ , Zn 6+);	(Fe 1+ , Lu 2+);
(Cl 5+ , Rb 7+);	(Ti 4+ , As 6+);	(Fe 2+ , S 3+);
(Ar 0+ , Ba 2+);	(V 1+ , Sr 2+);	(Fe 2+ , Cu 3+);
(Ar 0+ , Ce 2+);	(V 1+ , La 2+);	(Fe 2+ , Zn 3+);
(Ar 0+ , Pr 2+);	(V 1+ , Ce 2+);	(Fe 2+ , Br 3+);
(Ar 0+ , Nd 2+);	(V 1+ , Pr 2+);	(Fe 2+ , Zr 4+);
(Ar 0+ , Ra 2+);	(V 1+ , Nd 2+);	(Fe 2+ , Ce 4+);
(Ar 1+ , Ti 3+);	(V 1+ , Pm 2+);	(Fe 5+ , Sr 7+);
(Ar 2+ , C 3+);	(V 1+ , Sm 2+);	(Co 1+ , Mg 2+);
(Ar 3+ , K 4+);	(V 1+ , Eu 2+);	(Co 1+ , Cr 2+);
(Ar 3+ , Br 5+);	(V 2+ , O 2+);	(Co 1+ , Mn 2+);
(Ar 3+ , Mo 5+);	(V 3+ , Mn 4+);	(Co 1+ , Mo 2+);
(Ar 4+ , Y 5+);	(V 3+ , Co 4+);	(Co 1+ , Tc 2+);
(K 1+ , Si 3+);	(V 4+ , Ar 6+);	(Co 1+ , Pb 2+);
(K 1+ , P 3+);	(V 4+ , Sc 5+);	(Co 2+ , Cu 3+);
(K 1+ , Mn 3+);	(V 5+ , Mg 5+);	(Co 2+ , Zn 3+);
(K 1+ , Ge 3+);	(V 6+ , Sc 8+);	(Co 2+ , Br 3+);
(K 1+ , Rh 3+);	(V 6+ , Br 8+);	(Co 2+ , Zr 4+);
(K 1+ , Tl 3+);	(Cr 1+ , Sc 2+);	(Co 2+ , Ag 3+);
(K 2+ , He 2+);	(Cr 1+ , Ti 2+);	(Co 2+ , Ce 4+);
(K 2+ , Si 4+);	(Cr 1+ , Zr 2+);	(Co 2+ , Hf 4+);
(K 2+ , As 4+);	(Cr 1+ , Lu 2+);	(Co 4+ , Nb 6+);
(K 3+ , P 5+);	(Cr 2+ , F 2+);	(Co 5+ , Sc 6+);
(K 3+ , Zr 5+);	(Cr 2+ , Na 2+);	(Ni 1+ , Co 2+);
(K 4+ , Rb 6+);	(Cr 2+ , Se 3+);	(Ni 1+ , Ni 2+);
(K 5+ , Mg 4+);	(Cr 2+ , Pd 3+);	(Ni 1+ , Rh 2+);
(K 5+ , Kr 7+);	(Cr 2+ , I 3+);	(Ni 1+ , Cd 2+);
(K 6+ , Y 8+);	(Cr 2+ , Hg 3+);	(Ni 1+ , Sb 2+);
(Ca 1+ , C 2+);	(Cr 3+ , O 3+);	(Ni 2+ , Ne 2+);
(Ca 1+ , Sm 3+);	(Cr 3+ , Ni 4+);	(Ni 2+ , Ca 3+);
(Ca 1+ , Dy 3+);	(Cr 4+ , O 4+);	(Ni 2+ , Nd 4+);
(Ca 1+ , Ho 3+);	(Cr 5+ , Ne 5+);	(Ni 2+ , Tb 4+);
(Ca 1+ , Er 3+);	(Cr 5+ , Fe 7+);	(Ni 4+ , Rb 6+);
(Ca 1+ , Tm 3+);	(Mn 1+ , V 2+);	(Ni 6+ , Ar 8+);
(Ca 1+ , Lu 3+);	(Mn 1+ , Nb 2+);	(Cu 1+ , Ag 2+);
(Ca 2+ , O 3+);	(Mn 1+ , Sn 2+);	(Cu 1+ , I 2+);
(Ca 2+ , Ni 4+);	(Mn 1+ , Hf 2+);	(Cu 1+ , Cs 2+);

(Ca 3+ , Mn 5+);	(Mn 2+ , Cu 3+);	(Cu 1+ , Au 2+);
(Ca 3+ , Rb 5+);	(Mn 2+ , Zn 3+);	(Cu 1+ , Hg 2+);
(Ca 4+ , Cl 6+);	(Mn 2+ , Br 3+);	(Cu 2+ , Sm 4+);
(Ca 4+ , Ar 6+);	(Mn 2+ , Zr 4+);	(Cu 2+ , Gd 4+);
(Ca 4+ , Sc 5+);	(Mn 2+ , Ce 4+);	(Cu 2+ , Dy 4+);
(Ca 5+ , Y 7+);	(Mn 2+ , Hf 4+);	(Cu 3+ , K 4+);
(Sc 2+ , Ti 4+);	(Mn 3+ , Mg 3+);	(Cu 3+ , Br 5+);
(Sc 2+ , Bi 4+);	(Mn 3+ , Te 5+);	(Cu 3+ , Mo 5+);
(Cu 4+ , Rb 6+);	(Se 1+ , Fe 2+);	(Sr 1+ , Ga 2+);
(Cu 5+ , Mn 7+);	(Se 1+ , Co 2+);	(Sr 1+ , Te 2+);
(Zn 1+ , P 2+);	(Se 1+ , Ge 2+);	(Sr 1+ , Pt 2+);
(Zn 1+ , I 2+);	(Se 1+ , Ru 2+);	(Sr 1+ , Tl 2+);
(Zn 1+ , La 3+);	(Se 1+ , In 2+);	(Sr 2+ , C 3+);
(Zn 1+ , Au 2+);	(Se 1+ , Bi 2+);	(Sr 2+ , Mo 4+);
(Zn 1+ , Hg 2+);	(Se 2+ , Te 3+);	(Sr 3+ , Ar 4+);
(Zn 2+ , Ti 4+);	(Se 3+ , Br 4+);	(Sr 3+ , Sr 4+);
(Zn 2+ , Sn 4+);	(Se 5+ , Y 7+);	(Sr 3+ , Sb 5+);
(Zn 2+ , Bi 4+);	(Br 1+ , P 2+);	(Sr 3+ , Bi 5+);
(Zn 3+ , As 5+);	(Br 1+ , I 2+);	(Sr 4+ , Ar 5+);
(Zn 4+ , Sr 6+);	(Br 1+ , La 3+);	(Sr 4+ , Cu 5+);
(Zn 5+ , Mn 7+);	(Br 1+ , Au 2+);	(Y 2+ , Sr 3+);
(Zn 6+ , Mo 8+);	(Br 3+ , He 2+);	(Y 2+ , Cd 3+);
(Ga 1+ , Cr 2+);	(Br 3+ , Si 4+);	(Y 3+ , Se 5+);
(Ga 1+ , Mn 2+);	(Br 3+ , Ge 4+);	(Y 3+ , Pb 5+);
(Ga 1+ , Fe 2+);	(Br 4+ , S 5+);	(Y 4+ , Ti 5+);
(Ga 1+ , Ge 2+);	(Br 4+ , Cl 5+);	(Y 4+ , Zn 5+);
(Ga 1+ , Mo 2+);	(Br 5+ , Sb 6+);	(Y 5+ , Co 6+);
(Ga 1+ , Ru 2+);	(Br 6+ , Ar 8+);	(Y 6+ , K 7+);
(Ga 1+ , Bi 2+);	(Kr 1+ , B 2+);	(Zr 2+ , P 2+);
(Ga 2+ , Rb 3+);	(Kr 1+ , S 2+);	(Zr 2+ , Ag 2+);
(Ga 2+ , Eu 4+);	(Kr 1+ , Br 2+);	(Zr 2+ , I 2+);
(Ga 2+ , Tm 4+);	(Kr 1+ , Xe 2+);	(Zr 2+ , Cs 2+);
(Ge 1+ , Mg 2+);	(Kr 1+ , Nd 3+);	(Zr 2+ , La 3+);
(Ge 1+ , Mn 2+);	(Kr 1+ , Pm 3+);	(Zr 2+ , Au 2+);
(Ge 1+ , Tc 2+);	(Kr 1+ , Tb 3+);	(Zr 2+ , Hg 2+);
(Ge 1+ , Sn 2+);	(Kr 2+ , Kr 3+);	(Nb 2+ , C 2+);
(Ge 1+ , Pb 2+);	(Kr 2+ , Tb 4+);	(Nb 2+ , K 2+);
(Ge 2+ , F 2+);	(Kr 3+ , O 3+);	(Nb 2+ , Zr 3+);
(Ge 2+ , Na 2+);	(Kr 3+ , Ni 4+);	(Nb 2+ , Eu 3+);
(Ge 2+ , Se 3+);	(Kr 3+ , Kr 4+);	(Nb 2+ , Tm 3+);
(Ge 2+ , Pd 3+);	(Kr 3+ , Nb 5+);	(Nb 2+ , Lu 3+);
(Ge 2+ , I 3+);	(Kr 4+ , Zr 5+);	(Nb 3+ , Kr 3+);
(Ge 3+ , V 5+);	(Kr 5+ , Sr 6+);	(Nb 3+ , Pr 4+);
(Ge 3+ , Se 5+);	(Kr 6+ , Y 7+);	(Nb 3+ , Tb 4+);
(Ge 3+ , Pb 5+);	(Rb 1+ , Nb 3+);	(Nb 4+ , N 4+);
(As 1+ , Sc 2+);	(Rb 2+ , Te 4+);	(Mo 1+ , Ba 2+);
(As 1+ , Y 2+);	(Rb 2+ , Sm 4+);	(Mo 1+ , Pr 2+);
(As 1+ , Zr 2+);	(Rb 2+ , Gd 4+);	(Mo 1+ , Nd 2+);
(As 1+ , Lu 2+);	(Rb 2+ , Dy 4+);	(Mo 1+ , Ra 2+);

(As 2+ , Co 3+);	(Rb 2+ , Ho 4+);	(Mo 2+ , Ru 3+);
(As 2+ , Ga 3+);	(Rb 2+ , Er 4+);	(Mo 2+ , Sn 3+);
(As 2+ , Ge 3+);	(Rb 3+ , Mg 3+);	(Mo 3+ , Cr 4+);
(As 2+ , Tl 3+);	(Rb 3+ , Te 5+);	(Mo 3+ , Ge 4+);
(As 3+ , Fe 4+);	(Rb 5+ , Rb 6+);	(Mo 4+ , Bi 5+);
(As 4+ , Sb 6+);	(Rb 6+ , Te 7+);	(Mo 5+ , Mn 6+);
(Se 1+ , Al 2+);	(Sr 1+ , Be 2+);	(Mo 6+ , O 6+);
(Se 1+ , Si 2+);	(Sr 1+ , Zn 2+);	(Mo 6+ , Cr 7+);
(Tc 1+ , Sr 2+);	(Sn 1+ , Er 2+);	(Pr 2+ , Xe 2+);
(Tc 1+ , La 2+);	(Sn 2+ , N 2+);	(Pr 2+ , Pr 3+);
(Tc 1+ , Ce 2+);	(Sn 2+ , Ar 2+);	(Pr 2+ , Nd 3+);
(Tc 1+ , Pm 2+);	(Sn 2+ , V 3+);	(Pr 2+ , Pm 3+);
(Tc 1+ , Sm 2+);	(Sn 2+ , Mo 3+);	(Pr 2+ , Gd 3+);
(Tc 1+ , Eu 2+);	(Sn 3+ , Mn 4+);	(Pr 2+ , Tb 3+);
(Tc 1+ , Tb 2+);	(Sn 3+ , Fe 4+);	(Nd 2+ , Sm 3+);
(Tc 1+ , Dy 2+);	(Sn 3+ , Co 4+);	(Nd 2+ , Dy 3+);
(Ru 1+ , Ca 2+);	(Sb 2+ , Ti 3+);	(Nd 2+ , Ho 3+);
(Ru 1+ , Eu 2+);	(Sb 2+ , Sb 3+);	(Nd 2+ , Er 3+);
(Ru 1+ , Tb 2+);	(Sb 2+ , Bi 3+);	(Nd 2+ , Lu 3+);
(Ru 1+ , Dy 2+);	(Sb 3+ , C 3+);	(Pm 2+ , C 2+);
(Ru 1+ , Ho 2+);	(Te 1+ , Sc 2+);	(Pm 2+ , K 2+);
(Ru 1+ , Er 2+);	(Te 1+ , Y 2+);	(Pm 2+ , Zr 3+);
(Rh 1+ , V 2+);	(Te 1+ , Gd 2+);	(Pm 2+ , Eu 3+);
(Rh 1+ , Nb 2+);	(Te 1+ , Tm 2+);	(Pm 2+ , Tm 3+);
(Rh 1+ , Sn 2+);	(Te 1+ , Yb 2+);	(Sm 2+ , Cl 2+);
(Rh 1+ , Hf 2+);	(Te 1+ , Lu 2+);	(Sm 2+ , Sc 3+);
(Pd 1+ , Al 2+);	(Te 2+ , Sc 3+);	(Sm 2+ , Yb 3+);
(Pd 1+ , Si 2+);	(Te 2+ , Kr 2+);	(Eu 2+ , Nb 3+);
(Pd 1+ , Fe 2+);	(Te 2+ , Yb 3+);	(Gd 2+ , Cl 2+);
(Pd 1+ , Co 2+);	(Te 2+ , Hf 3+);	(Gd 2+ , Sc 3+);
(Pd 1+ , Ru 2+);	(Te 3+ , Ar 3+);	(Gd 2+ , Eu 3+);
(Pd 1+ , In 2+);	(Te 3+ , La 4+);	(Gd 2+ , Yb 3+);
(Pd 1+ , Sb 2+);	(Te 3+ , Yb 4+);	(Tb 2+ , B 2+);
(Pd 1+ , Bi 2+);	(Te 4+ , Bi 5+);	(Tb 2+ , S 2+);
(Ag 1+ , Cu 2+);	(I 1+ , Al 2+);	(Tb 2+ , Br 2+);
(Ag 1+ , As 2+);	(I 1+ , Si 2+);	(Tb 2+ , Xe 2+);
(Ag 1+ , Ag 2+);	(I 1+ , Fe 2+);	(Tb 2+ , Sm 3+);
(Ag 1+ , Cs 2+);	(I 1+ , Co 2+);	(Tb 2+ , Tb 3+);
(Ag 1+ , Hg 2+);	(I 1+ , Ge 2+);	(Tb 2+ , Dy 3+);
(Cd 1+ , Zn 2+);	(I 1+ , Ru 2+);	(Tb 2+ , Ho 3+);
(Cd 1+ , Ga 2+);	(I 1+ , In 2+);	(Tb 2+ , Er 3+);
(Cd 1+ , Cd 2+);	(I 1+ , Bi 2+);	(Dy 2+ , Cl 2+);
(Cd 1+ , Tl 2+);	(Xe 1+ , Al 2+);	(Dy 2+ , K 2+);
(In 1+ , Sc 2+);	(Xe 1+ , Co 2+);	(Dy 2+ , Zr 3+);
(In 1+ , Y 2+);	(Xe 1+ , Ni 2+);	(Dy 2+ , Eu 3+);
(In 1+ , Yb 2+);	(Xe 1+ , Rh 2+);	(Dy 2+ , Yb 3+);
(In 1+ , Lu 2+);	(Xe 1+ , Cd 2+);	(Ho 2+ , Sc 3+);
(In 2+ , Sr 3+);	(Xe 1+ , Sb 2+);	(Ho 2+ , Yb 3+);
(In 2+ , Cd 3+);	(La 2+ , Ti 3+);	(Ho 2+ , Hf 3+);

(Sn 1+ , Ca 2+);	(La 2+ , Sb 3+);	(Er 2+ , Sc 3+);	
(Sn 1+ , Sr 2+);	(Ce 2+ , Ag 2+);	(Er 2+ , Yb 3+);	
(Sn 1+ , La 2+);	(Ce 2+ , I 2+);	(Er 2+ , Hf 3+);	
(Sn 1+ , Sm 2+);	(Ce 2+ , Cs 2+);	(Tm 2+ , Kr 2+);	
(Sn 1+ , Eu 2+);	(Ce 2+ , Au 2+);	(Tm 2+ , Nb 3+);	
(Sn 1+ , Tb 2+);	(Ce 2+ , Hg 2+);	(Tm 2+ , Hf 3+);	
(Sn 1+ , Dy 2+);	(Pr 2+ , B 2+);	(Yb 2+ , Ti 3+);	
(Sn 1+ , Ho 2+);	(Pr 2+ , Y 3+);	(Lu 2+ , Kr 2+);	
(Lu 2+ , Hf 3+);	(Pb 2+ , As 3+);	(Tl 1+ , Mg 2+);	
(Hf 2+ , As 2+);	(Pb 2+ , In 3+);	(Tl 1+ , Mn 2+);	
(Hf 2+ , Ag 2+);	(Pb 2+ , Te 3+);	(Tl 1+ , Mo 2+);	
(Hf 2+ , I 2+);	(Pb 2+ , Pb 3+);	(Tl 1+ , Tc 2+);	
(Hf 2+ , Cs 2+);	(Pb 3+ , Br 4+);	(Tl 1+ , Sn 2+);	
(Hf 2+ , Hg 2+);	(Bi 1+ , Ba 2+);	(Tl 1+ , Pb 2+);	
(Hg 1+ , Al 2+);	(Bi 2+ , Ar 2+);	(Pb 1+ , Sc 2+);	
(Hg 1+ , Si 2+);	(Bi 2+ , Mo 3+);	(Pb 1+ , Y 2+);	
(Hg 1+ , Co 2+);	(Bi 3+ , Se 4+);	(Pb 1+ , Lu 2+);	and
(Hg 1+ , Ni 2+);	(Bi 3+ , Mo 4+);	(Pb 2+ , Fe 3+);	
(Hg 1+ , Rh 2+);	(Bi 3+ , Pb 4+);		
(Hg 1+ , Cd 2+);	(Bi 4+ , P 5+);		
(Hg 1+ , In 2+);	(Bi 4+ , Kr 5+);		
(Hg 1+ , Sb 2+);	(Bi 4+ , Zr 5+);		

44. (Previously Presented) A method according to claim 31, wherein said catalyst comprising at least one free atom selected from the group consisting of Be, Cu, Zn, Pd, Te and Pt.

45. (Previously Presented) A method according to claim 31, wherein said catalyst comprising at least two species selected from the group consisting of:

(Li 0+ , Ar 5+);	(P 1+ , Nd 4+);	(Ti 2+ , As 5+);
(Li 0+ , Mo 6+);	(P 1+ , Tb 4+);	(Ti 2+ , Se 5+);
(Be 0+ , Kr 5+);	(P 3+ , Na 5+);	(V 1+ , Cd 3+);
(B 0+ , Sc 3+);	(S 0+ , Sm 3+);	(V 1+ , I 3+);
(B 0+ , Zr 3+);	(S 0+ , Dy 3+);	(V 1+ , Hg 3+);
(B 0+ , Yb 3+);	(S 0+ , Ho 3+);	(V 2+ , Kr 4+);
(C 0+ , Te 3+);	(S 0+ , Er 3+);	(V 2+ , Nb 5+);
(C 0+ , Tl 3+);	(S 0+ , Lu 3+);	(V 4+ , Ni 7+);
(N 0+ , Ag 3+);	(S 1+ , Nb 4+);	(V 4+ , Kr 8+);
(N 0+ , Cd 3+);	(S 1+ , Ho 4+);	(Cr 1+ , S 3+);
(N 0+ , Hg 3+);	(S 1+ , Er 4+);	(Cr 1+ , Ca 3+);
(N 1+ , Bi 5+);	(S 1+ , Tm 4+);	(Cr 3+ , Be 3+);

(N 2+ , Br 6+); (S 2+ , Bi 5+); (Cr 3+ , Zn 5+);
 (N 2+ , Kr 6+); (Cl 0+ , Ti 3+); (Cr 5+ , Cu 8+);
 (O 0+ , Cl 3+); (Cl 1+ , Mo 4+); (Mn 1+ , Nd 4+);
 (O 0+ , Kr 3+); (Cl 1+ , Pb 4+); (Mn 1+ , Tb 4+);
 (O 0+ , Sm 4+); (Cl 3+ , Sc 5+); (Mn 2+ , Ca 4+);
 (O 0+ , Dy 4+); (Cl 4+ , Br 7+); (Mn 3+ , Nb 6+);
 (O 2+ , Na 4+); (Ar 0+ , Mn 3+); (Mn 5+ , Ca 8+);
 (O 2+ , Cl 6+); (Ar 0+ , As 3+); (Fe 1+ , Nd 4+);
 (O 2+ , Mn 6+); (Ar 0+ , Rh 3+); (Fe 1+ , Pm 4+);
 (O 3+ , Al 5+); (Ar 0+ , Tl 3+); (Fe 1+ , Tb 4+);
 (F 0+ , Bi 4+); (Ar 1+ , Mn 4+); (Fe 3+ , Ne 4+);
 (F 1+ , Mn 5+); (Ar 1+ , In 4+); (Fe 5+ , Mo 8+);
 (F 3+ , Mg 5+); (Ar 5+ , Mg 5+); (Co 1+ , Pm 4+);
 (F 4+ , Ti 8+); (K 0+ , Al 3+); (Co 2+ , C 4+);
 (Ne 1+ , Ge 5+); (K 0+ , Cr 3+); (Co 3+ , Mg 4+);
 (Ne 4+ , Al 6+); (K 0+ , Pb 3+); (Ni 1+ , La 4+);
 (Na 0+ , Cr 4+); (K 1+ , Sc 4+); (Ni 1+ , Yb 4+);
 (Na 0+ , Ge 4+); (K 2+ , Cl 5+); (Ni 1+ , Lu 4+);
 (Na 1+ , Sc 5+); (Ca 0+ , Eu 3+); (Ni 2+ , K 4+);
 (Na 1+ , Bi 6+); (Ca 0+ , Dy 3+); (Ni 5+ , Fe 8+);
 (Na 3+ , Ne 6+); (Ca 0+ , Ho 3+); (Cu 0+ , Ce 3+);
 (Na 4+ , Ne 7+); (Ca 0+ , Er 3+); (Cu 0+ , Pr 3+);
 (Mg 0+ , Kr 3+); (Ca 1+ , Mg 3+); (Cu 1+ , Ar 3+);
 (Mg 2+ , Al 5+); (Ca 1+ , Fe 4+); (Cu 1+ , Ti 4+);
 (Mg 3+ , Na 6+); (Ca 1+ , Co 4+); (Cu 1+ , Te 4+);
 (Al 1+ , Zr 5+); (Ca 3+ , Co 6+); (Cu 2+ , Sn 5+);
 (Al 3+ , Mg 6+); (Ca 3+ , Y 6+); (Zn 0+ , Y 3+);
 (Al 3+ , Cr 8+); (Sc 1+ , C 3+); (Zn 0+ , Pm 3+);
 (Si 1+ , Zn 3+); (Sc 1+ , Te 4+); (Zn 0+ , Gd 3+);
 (Si 1+ , Ce 4+); (Ti 1+ , Mn 3+); (Zn 0+ , Tb 3+);
 (Si 2+ , Na 4+); (Ti 1+ , Ga 3+); (Zn 1+ , Mo 4+);
 (Si 2+ , Cl 6+); (Ti 1+ , As 3+); (Zn 1+ , Pb 4+);
 (Si 3+ , Be 4+); (Ti 1+ , Rh 3+); (Zn 2+ , N 4+);
 (Si 5+ , N 6+); (Ti 1+ , Tl 3+); (Zn 2+ , Kr 5+);
 (Zn 3+ , N 5+); (Y 5+ , Co 7+); (Ce 1+ , Ho 3+);
 (Zn 5+ , Co 8+); (Zr 1+ , Zr 3+); (Ce 1+ , Er 3+);
 (Ga 1+ , Bi 4+); (Zr 2+ , Sc 4+); (Ce 1+ , Lu 3+);
 (Ge 1+ , S 3+); (Zr 2+ , Sr 4+); (Pr 1+ , Sc 3+);
 (Ge 1+ , Ce 4+); (Nb 1+ , Mo 3+); (Pr 1+ , Zr 3+);
 (As 1+ , Ca 3+); (Nb 1+ , Sb 3+); (Pr 1+ , Yb 3+);
 (As 1+ , Br 3+); (Nb 1+ , Bi 3+); (Nd 1+ , Nb 3+);
 (As 2+ , F 3+); (Nb 2+ , Sn 4+); (Nd 1+ , Hf 3+);
 (As 2+ , Kr 4+); (Nb 2+ , Sb 4+); (Pm 1+ , Nb 3+);
 (As 2+ , Nb 5+); (Nb 3+ , Co 5+); (Sm 1+ , Ti 3+);
 (Se 1+ , Zn 3+); (Nb 3+ , Rb 5+); (Eu 1+ , V 3+);
 (Se 1+ , Ce 4+); (Nb 4+ , Zn 6+); (Eu 1+ , Mo 3+);
 (Se 2+ , Kr 4+); (Mo 1+ , Se 3+); (Eu 1+ , Sb 3+);
 (Se 2+ , Nb 5+); (Mo 1+ , I 3+); (Gd 1+ , Bi 3+);
 (Se 3+ , Ni 5+); (Mo 4+ , Fe 6+); (Tb 1+ , Hf 3+);

(Se 4+ , Nb 7+); (Mo 5+ , Rb 8+); (Dy 1+ , Ti 3+);
 (Br 0+ , Eu 3+); (Ag 0+ , La 3+); (Ho 1+ , Bi 3+);
 (Br 0+ , Tm 3+); (Ag 0+ , Ce 3+); (Er 1+ , Bi 3+);
 (Br 1+ , Nb 4+); (Cd 0+ , La 3+); (Tm 1+ , V 3+);
 (Br 1+ , Gd 4+); (In 1+ , Nd 4+); (Tm 1+ , Mo 3+);
 (Br 1+ , Ho 4+); (In 1+ , Tb 4+); (Tm 1+ , Sb 3+);
 (Br 1+ , Er 4+); (Sn 1+ , Si 3+); (Yb 1+ , Al 3+);
 (Br 2+ , F 3+); (Sn 1+ , Co 3+); (Yb 1+ , Ru 3+);
 (Br 2+ , Ga 4+); (Sn 1+ , Ge 3+); (Yb 1+ , In 3+);
 (Br 3+ , O 4+); (Sn 2+ , F 3+); (Yb 1+ , Sn 3+);
 (Br 3+ , Al 4+); (Sn 2+ , Ga 4+); (Lu 1+ , Tc 3+);
 (Br 4+ , N 5+); (Sb 1+ , Si 3+); (Lu 1+ , Ru 3+);
 (Kr 0+ , Ti 3+); (Sb 1+ , Co 3+); (Lu 1+ , In 3+);
 (Kr 1+ , Sn 4+); (Sb 1+ , Ge 3+); (Lu 1+ , Sn 3+);
 (Kr 1+ , Sb 4+); (Sb 2+ , As 4+); (Hf 1+ , Sc 3+);
 (Kr 2+ , Ne 3+); (Te 1+ , Mn 3+); (Hf 1+ , Yb 3+);
 (Kr 2+ , Bi 5+); (Te 1+ , As 3+); (Hg 0+ , La 3+);
 (Kr 3+ , O 4+); (Te 1+ , Rh 3+); (Pb 1+ , Ni 3+);
 (Kr 3+ , Al 4+); (Te 1+ , Te 3+); (Pb 1+ , Se 3+);
 (Kr 4+ , Ar 6+); (Te 1+ , Tl 3+); (Pb 2+ , F 3+);
 (Rb 0+ , Sc 3+); (Te 2+ , Cr 4+); (Pb 2+ , Ga 4+);
 (Rb 0+ , Zr 3+); (Te 2+ , Ge 4+); (Bi 1+ , P 3+);
 (Rb 0+ , Yb 3+); (Te 2+ , As 4+); (Bi 1+ , Sr 3+);
 (Rb 1+ , N 3+); (Te 3+ , Zr 5+); (La 1+ , Ru 3+);
 (Sr 1+ , C 3+); (Te 4+ , Ni 6+); (La 1+ , In 3+);
 (Sr 1+ , Ar 3+); (Te 4+ , Cu 6+); (La 1+ , Sn 3+);
 (Sr 1+ , Ti 4+); (Xe 0+ , Pr 3+); (Ce 1+ , Sm 3+); and
 (Sr 1+ , Te 4+); (Xe 0+ , Nd 3+); (Ce 1+ , Dy 3+);
 (Sr 3+ , Nb 6+); (La 1+ , Tc 3+);

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$$\text{Binding Energy} = \frac{\hbar^2 \sqrt{s(s+1)}}{8\mu_e a_0^2 \left[\frac{1 + \sqrt{s(s+1)}}{p} \right]^2} - \frac{\pi \mu_0 e^2 \hbar^2}{m_e^2 a_0^3} \left(1 + \frac{2^2}{\left[\frac{1 + \sqrt{s(s+1)}}{p} \right]^3} \right)$$

sented) A method according to claim 30, wherein increased binding energy hydride ions are formed having a binding energy greater than the binding energy of the corresponding ordinary hydride ion for $p = 2$ up to 23 in which the binding energy is represented by

where p is an integer greater than 1, $s = \frac{1}{2}$, \hbar is Plank's constant bar, μ_0 is the permeability of vacuum, m_e is the mass of the electron, μ_e is the reduced electron mass, a_0 is the Bohr radius, and e is the elementary charge.

47. (Previously Presented) A method according to claim 46, wherein p is 2 to 200.
48. (Previously Presented) A method according to claim 46, wherein a cation migrates through a salt bridge and forms a neutral compound with said hydride ion.
49. (Previously Presented) A method according to claim 30, wherein the increased binding energy hydride ion has a binding energy of about 3.0, 6.6, 11.2, 16.7, 22.8, 29.3, 36.1, 42.8, 49.4, 55.5, 61.0, 65.6, 69.2, 71.53, 72.4, 71.54, 68.8, 64.0, 56.8, 47.1, 34.6, 19.2 or 0.65 eV.
50. (Previously Presented) A method according to claim 30, further comprising the step of decomposing a compound containing at least one hydrino atom to provide said hydrino atoms.
51. (Previously Presented) A method according to claim 50, wherein said compound containing a hydrino atom comprises:
 - (a) at least one neutral, positive or negative increased binding energy hydrogen species having a binding energy:
 - (i) greater than the binding energy of the corresponding ordinary hydrogen species, or
 - (ii) greater than the binding energy of any hydrogen species for which the corresponding ordinary hydrogen species is unstable

or is not observed because the ordinary hydrogen species' binding energy is less than thermal energies at ambient conditions, or is negative; and

(b) at least one other element, wherein said increased binding energy hydrogen species is selected from the group consisting of H_n , H_n^- , and H_n^+ , where n is an integer of 1 to 8, and n is greater than 1 when H has a positive charge.

52. (Previously Presented) A fuel cell comprising:
- a vessel having first and second compartments;
 - a source of at least one increased binding energy hydrogen species associated with said first compartment;
 - a cathode in said first compartment;
 - an anode in said second compartment; and
 - a salt bridge connecting said anode and said cathode.
53. (Previously Presented) A fuel cell comprising:
- a first walled structure defining an internal volume, wherein at least one wall comprises a cathode;
 - a second walled structure defining an internal volume containing an anode;
 - a salt bridge connecting the internal volumes of said first and second walled structures;
 - a source of reductant associated with said second walled structure; and
 - a source of hydrino atoms associated with said first walled structure.
54. (Previously Presented) A fuel cell according to claim 52, wherein the increased binding energy species is hydride ion having a binding energy of about 3.0, 6.6, 11.2, 16.7, 22.8, 29.3, 36.1, 42.8, 49.4, 55.5, 61.0, 65.6, 69.2, 71.53, 72.4, 71.54, 68.8, 64.0, 56.8,

47.1, 34.6, 19.2 or 0.65 eV.

55. (Previously Presented) A fuel cell comprising:
- a first walled structure defining an internal volume, wherein at least one wall comprises a cathode;
 - a second walled structure defining an internal volume containing an anode;
 - a salt bridge connecting the internal volumes of said first and second walled structures;
 - a source of reductant; and
 - a source of hydrino atoms.
56. (Previously Presented) A fuel cell according to any one of claims 1, 15, 16, 18, 20, 22-29 and 52, wherein said cathode is said first compartment.
57. (Previously Presented) A fuel cell according to claim 15, wherein said source of hydrino atoms comprises at least one of an electrolytic cell, a gas cell, a gas discharge cell or plasma torch cell.
58. (Previously Presented) A fuel cell according to claim 15, wherein said source of hydrino atoms comprises a compound comprising hydrino atoms that releases hydrino atoms when thermally decomposed by heating or chemically decomposed by reaction with an element that replaces hydrino atoms, hydrino hydride ions, dihydrino molecular ions or dihydrino molecules.-
59. (Previously Presented) A fuel cell comprising:
- a first compartment containing a cathode;
 - a source of hydrino atoms associated with said first compartment, wherein the source of hydrino atoms comprises a compound containing at least one hydrino atom;

a second compartment containing an anode;
a source of reductant associated with said second compartment; and
a salt bridge between said anode and said cathode.

60. (New) A fuel cell according to claim 59, wherein the source of hydrino comprises LiH.